



SUSTAINABLE MINING IN JURUTI?

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ABSTRACT

The study deals with the sustainability of Alcoa's mining project in Juruti-Pará-Brazil taking as a reference the theory of sustainable development. It emphasized aspects of the economic and political practices of the project restricted to the urban area. The methodology involved bibliographic and documentary research, secondary data collection and participant observation. Among the results, we highlight the increase in GDP, the transformation of the economic structure from agrarian to services and industrial, the growth of the number of companies and the transfer of the majority of the economically active urban population to employment in the business sector. However, there has been no economic clutter and there is still Alcoa's challenge to integrate alternative governance spaces under construction by its stakeholders. Economic sustainability will depend on the effectiveness of political sustainability.

KEYWORDS: mining, sustainability, economic agglomeration, governance.

INTRODUCTION

Alcoa's mineral exploration in Juruti Juruti-Pará has been disclosed as a sustainable mining model (Ibram, 2014). According to Alcoa, the Juruti Sustainable Project (PJS) is a "model of local sustainable development agenda for Juruti and environment" (Alcoa, Fgv, Funbio, 2009:9) and, as such, needs to meet the environmental, social and economic assumptions from start to post-mine closure to be characterized as sustainable (Prno, Scolombe, 2012). Do the company's concrete economic and political actions generate local sustainable development?

This study aims to analyze the sustainability of the PJS, its political and economic relations with local stakeholders, which are the agents or interest groups that exist in society, communities, organizations, companies and government that are affected, directly or indirectly, by the enterprises (Cabral, Fernandes and Ribeiro, 2016). The aim is to understand if these relations are in line with democratic and participatory principles, and if sustainable development (SD) is being fostered, to promote the structuring of an autonomous and sustainable economic base in the locality, which contributes to the formation of local productive clusters that seek greater productivity through the logistical advantages related to the productive chain, the supply of raw materials and services (Teixeira, 2010; Souza, 1980), and the incentive to the independent mining activities, resulting from the economic potential of the site itself and committed to the local market. This economic agglomeration is a systemic process that involves the motor company and other municipal companies, making possible the effective dynamization of the local economy in order to make it more autonomous and independent of the enterprise. Such activities, however, need to be sustainable not only in the sense of conciliation between economy, environment and society, but also in the sense of being sustained, that is, of having the capacity to survive and perpetuate in time, for which it dynamic and competitive activities (Ibram, 2012, Fernandes et al., 2011). The aspects of the economic and political practices of the mining enterprise restricted to the urban area, being ignored its environmental aspects.

The social license to operate (SLO) is a broad and continuous approval and acceptance of society for the company to conduct its activities. Following observations on the fluid and intangible character of this term, since it does not comply with regulatory milestones, with consolidated objective criteria and to a large extent, it is based on subjective perceptions of the population, the Environment and Energy Bulletin (Eeb, 2015:2) points out that "social license, then, can be seen as an intangible construction associated with acceptance, approval, consent, demands, expectations and reputation".

The importance of SLO lies in the losses that a negative relationship with the local society can cause for the mining company: protests, blockades, lawsuits, difficulty in obtaining government licenses, negative media campaigns, political lobbying, etc. Are some of the barriers that can occur and result in economic losses for companies. That is, a negative relation represents a social cost to the company and this social cost has a great potential to become high economic costs and, even, to make the mining enterprise unfeasible (Prno and Slocombe, 2012; Eeb, 2015; Owen and Kemp, 2013). Therefore, to a large extent, the social license to operate is closely associated with the company's "survival instinct" (Owen and Kemp, 2013). Prno and Slocombe (2012:46) point out that the concept of SLO is relatively new in the scientific literature. According to Prno and Slocombe (2012), the concept of SLO has its origin in the growing acceptance of contemporary societies of the paradigm of sustainable development, in the struggle of the local communities for the greater participation in the decision making as much as in the greater participation in the generated wealth, and in the very change of

governance of mining companies that increasingly recognize that the old methods of doing business are no longer an option if the industry wants to remain viable.

More emphatically, the Eeb (2015:3) states that the concept of SLO was coined in the late 1990s. Prno and Slocombe (2012:346) also point out that the concept of SLO, along with the concept has been established as a central indicator of sustainability of mining business activity: "stakeholders now require companies to align more closely with the principles of sustainable development, of which increasing community participation in decision-making is a central goal".

MATERIALS AND METHODS

The study used bibliographic and documentary research techniques (Mann, 1983), case study (Howard, 1997), secondary data collection and participant observation in field work. With these resources, quantitative and qualitative data, used here in combination, were obtained.

Documentary research is a decisive methodological resource in the construction of this study, since many documents, important sources of information, have been produced since the environmental licensing process, either by Alcoa itself or by companies, private and governmental institutions such as INCRA, SEMA, or by researchers. Documentary research is appropriate to the study since it is carried out from primary sources, documents, contemporaneous or retrospective, considered scientifically authentic. According to Peter Mann (1983:61-3)

The two main sources of sociological data come from the internal world of the library and from the external world of living people ... It is customary, in research, to distinguish between the sources of the documents by classifying them: (...) 'primaries' and 'Secondary' (...) Primary sources provide data collected first hand; It means that it is the original collections of data produced by the people who collected them. They contrast with secondary sources, which are second-hand data; That is to say, sets of data not collected first hand, but rather taken from the original data of other people.

In order to analyze the repercussions of the mining enterprise as a vector of sustainable development in the urban area of Juruti, it was chosen as the main variable the dynamization and agglomeration of enterprises. This is a key variable in triggering a process of sustainable development, insofar as it expands occupational opportunities, raises municipal revenue, positively influences the structuring of urban, public and private services, as well as boosting autonomous processes of economic structuring. It is this process of agglomeration that ends up incorporating most of the work force that migrates in search of occupational opportunities in these large projects, since the same, in the plant, usually generate an insufficient number of jobs to supply the demand.

The concept of governance corresponds, at a practical level, to a management technique aimed at establishing dialogues between social actors that dispute the scarce resources of the same territory, the negotiated and dialogued search for solutions to common problems, and the democratic planning of actions Public and business sectors with strong and varied impacts.

RESULTS AND DISCUSSIONS

Economic dynamism occurs through the creation of direct and indirect jobs and the promotion of other activities in the local primary, secondary and tertiary sectors. An important indicator of economic dynamism is Gross Domestic Product (GDP) and its distribution by sectors of economic activity according to table 1.

Table 1.

GDP at current prices, GDP per capita and participation in GDP of the main sectors of the economy of the municipality of Juruti from 1999 to 2014.

Year	GDP (in US\$)*	GDP per capita (in US\$)*	Farming (in US\$)*	Industry (in US\$)*	Services** (in US\$)*	Public administration*** (in US\$)*
1999	9791742.67	-	3558008.07	615043.17	5462422.47	-
2000	10790769.79	-	3890915.72	645141.68	6114252.71	-
2001	13143317.52	-	5009728.81	852790.95	7076188.74	-
2002	20517147.03	-	9334488.63	867688.19	3211115.16	7103855.04
2003	27578438.53	-	14270339.29	1043110.79	397513.07	8289857.72
2004	28015930.93	-	12848108.96	1439863.80	4430864.65	9297093.52
2005	25781649.03	-	8724917.91	1053447.65	4677125.14	11325854.31
2006	28774778.06	-	9461875.23	1594308.65	5225586.77	12492703.39
2007	40761279.34	-	7465037.09	6572418.83	11192995.26	15531132.19
2008	52031801.05	-	9843122.95	8761096.92	14507783.05	18919798.13
2009	76419494.10	-	14649154.81	18943816.13	18847744.13	23978779.03
2010	138678098.02	3101.68	25397361.06	54916089.02	27998905.51	30365438.40
2011	165522619.48	3575.73	16914751.31	79948923.75	33906725.04	34752219.39
2012	165940350.24	3489.69	24590173.90	64183996.11	36790100.94	40376383.32
2013	255015809.32	5130.11	97795512.59	67742004.14	46173537.64	43305058.98
2014	266103307.80	5203.33	89201021.53	70097592.12	57184117.72	49620576.43

Source: Ibge, 2017. * Amounts quoted based on the selling exchange rate of the Central Bank of Brazil on June 16, 2017 at the amount of R\$ 3.2892/US\$ 1.00. **Exclusive administration, health, social security and public education. ***Administration, health, social security and public education.

Until 2006, the Jurutian economy was an agrarian and service economy, with emphasis on the public sector. As of 2007, industrial activity is gaining momentum, which grows by more than 300% compared to 2006. It should be noted that 2006 is exactly the year that Alcoa starts installing the infrastructure for the exploration of the bauxite mine. For a brief period from 2005 to 2009 the economy of Juruti loses the status of agrarian economy and takes the form of a service economy. The growth of this sector, both in the public sphere and in the private sphere, has remained strong and constant since then. But despite losing its most important economic activity position and remaining in third place since 2009, agriculture and livestock also experienced strong growth, from almost 50%, from 2007 to 2008, and from 73% from 2008 to 2009. In 2013 the agricultural sector experienced a strong growth, surpassing even the industrial activity.

The data on the evolution of the GDP of Juruti ignite the warning sign because they show a growth between 2013 and 2014 well below the levels of growth of the years 2000 before the installation of the enterprise, besides showing, despite the leap from 2012 to 2013, a low-growth trend after bauxite extraction began in October 2009, when companies in the installation phase of the venture ceased to provide services to Alcoa, began firing employees and leaving bauxite, as has happened again starting in 2016 with the companies that, after losing the contract with the mining company, went bankrupt, or left the municipality. Gathering this information from the private sector with information about the precarious municipal public finances, whose city hall, in addition to being scrapped, is lagging behind the staff and suppliers, and whose mayor has sought financial support from the state government and the federal government to meet the minimum demands of the municipality of Juruti-PA, it is perceived that the practice of sustainability of the enterprise in the municipality is in check.

In table 2, this movement in the economy is observed through data on the number of companies operating in Juruti and related variables in 2006, 2010, 2012 and 2014. The data show that there was a reduction of almost 46.0% in the number of companies acting in Juruti between 2010, the year in which the works of installation of the mineral project are closed and the company begins to operate, for 2012, year in which the local economic growth was almost null. However, from 2012 to 2014, there is an increase in the number of business units, which may be due to the fact that, following the mining operation, the company has contracted other local companies to integrate its scale of operations, production and service.

Table 2.

Business units, occupied in the business units, average monthly salary and wages and income in Juruti-Pará in 2006, 2010, 2012 and 2014.

Indicators	Year			
	2006	2010	2012	2014
Number of companies involved		425	230	341
Number of local units	188	428	234	346
Salaried employed persons	1.974	5.001	5.170	4.268
Total staffed	2.084	5.402	5.429	4.642
Average monthly salary (in minimum wage)	1,9	2,4	2,8	3,0
Salary mass / income (in millions)	16.166	71.908	111.756	139.389

Source: Ibge (2017).

A significant figure is the number of jobs in total occupations generated by companies in the municipality. Of the 4,642 people employed in 2014 in the companies, 4,268 were salaried, that is to say, registered workers, quality jobs, which corresponds to 91.9% of total occupations. It is also interesting to note that the number of enterprises and the number of people employed in enterprises from 2010 to 2014 reduces, but proportionately, the number of people employed per business unit increases: it was 12.6 people for each business unit in 2010 and increases to 13.4 in 2014, which indicates that the crisis that affected local businesses between the years 2011 and 2012 has led to a process of merger or incorporation business. This is a typical process of local capital concentration.

The 2010 Ibge sense registered a population of 47,086 thousand people in Juruti, 31,234 in the rural area and 15,852 in the urban area, that is, 66.3% lived in the rural area and 33.7% in the urban area. By 2014, the population projection for Juruti was about 48,434 thousand people. Maintained the proportion of 66.0% rural population and 34.0% urban population, we have, respectively, 31,966 and 16,468 people. In this case, as the business activity is concentrated in the urban area, we have that the 4,642 people employed in business correspond to 28.2% of the urban population of Juruti. This is a significant percentage of population occupancy, considering that these data are excluded from those employed in the public sector. In order to better understand the importance of business activity for the economy as a whole, it is necessary to consider the relation of occupations generated by it to the economically active population active population (EAP) that corresponds to the working-age population that is employed or unemployed. Taking the national context as a parameter, when calculated in relation to the reality of 2014, we would have that the local EAP would be 25,186 people, corresponding to 52%. By the same criterion, the urban EAP would be 8,563 people. Of this amount, 4,642 people were employed in business activities, this would correspond to 18.4% of the total EAP in the municipality and 54.2% of the urban EAP (Ibge, 2017). These data become more significant when compared to the data of 2006. For this year, the population estimate was of about 33 thousand inhabitants. By the criterion applied above, of this total 17,160 were the EAP of the municipality. Of this, 11,325 were in the rural area and 5,835 in the urban area. This year, 2,084 people were employed in companies, corresponding to 12.1% of the total EAP in the municipality and 35.7% of the urban EAP, estimated at 5,835 people (Ibge, 2017). This means that most of the urban EAP was still occupied or in rural activities or public services.

The mining enterprise promoted the restructuring of the Jurutian economy. Municipal GDP experienced a considerable increase, the economic structure of the municipality changed, from a typically primary economy to a secondary and tertiary economy, the occupational structure suffered a considerable change, with most of the EAP engaged in business activities. One way for the driving company to dynamise and agglomerate the economy from which it is established is through the acquisition of part of the inputs, equipment and services that it needs with the local business community. In this direction, Alcoa has acted through the formation of a network of local suppliers that is still very small in relation to the volume of resources that the company mobilizes. Alcoa also invests in the qualification of these local suppliers, through the Supplier Qualification Program, aimed, according to the company, to develop good practices in business management, compliance with socio-environmental standards and health and safety of business (Alcoa, 2017). These data seem to indicate that the company is corroborating to promote not only dynamization, but also economic agglomeration in the municipality. However, several problems involving entrepreneurs that make up

the company's network of suppliers expose the fragility, unsustainability and asstasticity of this process. Therefore, although Alcoa has constituted a network of local suppliers in Juruti, it has so far not assumed the form of a systemic, autonomous and competitive economic cluster. On the contrary, there is a perceptible dependence of the local business community on mining activity, as evidenced by bankruptcies and the business crisis of the period 2011-2014. The constitution of a sustainable mining model, however, will depend on the deepening of these initiatives.

As for governance, there are advances in the process of institutional organization identified with the creation of the Sustainable Juruti Institute (Ijus). Alcoa has thought and implemented the Sustainable Juruti Council (Conjus) as a forum for debate, negotiation of interests and collective planning with its stakeholders, however, refusing to participate and accept collective decisions and claims arising in other spaces in which the company Does not exercise the control and hegemony of the debate, such as the case of the hearing organized by the Acorda Juruti Movement (Majur), on May 29, 2013 (Majur, 2013). It can be said that the situation of conflict remains as a climate that hangs in the air. The land occupations claimed by Alcoa and the reposessions obtained by the company, which caused serious damage to the invading occupants by the felling of their shacks, denounce the tension of the existing conflict.

CONCLUSIONS

The mining enterprise of Alcoa in Juruti contributed to the restructuring of local economic activity, with emphasis on GDP growth, the rise of the secondary and tertiary sectors to the center of local economic dynamics with the transformation of the economic structure from agrarian to services and industrial, the growth of the number of companies and the change of the occupational profile in the city, with the transfer of the greater part of the EAP, previously disposed in rural activities or public services, to the modern business sector, where wages prevail. However, there has been no corporate agglomeration, a systemic process involving the motor company and other municipal companies, thus reducing the potential of an effective dynamization of the local economy in order to make it more autonomous and independent of the enterprise. There has been a restructuring of the local economy, but an autonomous dynamic of economic agglomeration and sustainable development of the local economy has not been promoted. The relation of dependence of the evolution of the local economy in relation to the enterprise has been and continues very strong. The issue of economic sustainability will not be resolved without the constitution of a sustainable governance model born from the initiative of local stakeholders. Economic sustainability will depend on the effectiveness of political sustainability.

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